State of South Carolina's Coastal Resources

Shrimp Update

Introduction

The most valuable fishery in the southeastern United States is the harvest of penaeid shrimp. In South Carolina and Georgia, this fishery is comprised of two species, the white (*Litopeneaus setiferus*) and brown (*Farfantepenaeus aztecus*) shrimps, with white shrimp dominating catches. Pink shrimp (*F. duorarum*) also occur but are a minor component of commercial catches in SC. This report provides an update on the 2005 status of penaeid shrimp in South Carolina. Previous status reports up to 2004 are available at http://www.dnr.sc.gov/marine/ publications.html under "State of Resources".

Commercial Fishery Harvest of Wild-stock Shrimp

Penaeid shrimp caught by trawl and channel net constitute important commercial fisheries in South Carolina, with approximately 2.2 million pounds of shrimp (heads-off), including all species of wild-stock shrimp, landed with an approximate value to the harvesters of $5.6 million in 2005. However, commercial shrimp landings were the lowest recorded since 1985, when landings were affected by a severe winter. Total value was approximately $7 million below the long-term average due in part to weak unit prices symptomatic of increased imports. White shrimp landings in 2005 were 44% below the long-term average and were the lowest recorded over the past 25 years, when winter freezes did not affect abundance (Figure 1a). Brown shrimp landings were similar to 2004, below the long-term average (Figure 1b).

In the 1990s, trawling license numbers in South Carolina were fairly stable fluctuating between 800 and 1000 licenses sold per season. Since 2000, both the numbers of resident and non-resident licenses have shown decreasing trends, with the exception of non-resident licenses in 2002 (Table 1).

Table 1. Number of SC trawling licenses by year.

Year	Resident	Non-resident	Total
2000	507	408	915
2001	418	269	687
2002	403	314	717
2003	372	199	571
2004	365	190	555
2005	337	131	488

In September 2003 a mandatory trip ticket system was put into place to collect information on area fished, effort, and pounds by grade. Analysis of these data shows a difference between the catch per unit effort in the falls of 2003-2005 (Figure 2). Although only small differences were seen in the total landings between years, catch rates were highest in 2005 due to a substantial decrease in the number of hours spent trawling. The number of hours trawled in October and November has decreased by more than 50% over this two-year period. Decreases in effort were seen primarily on large and mid-size trawlers (headrope greater than or equal to 60 feet), while effort was stable on small boats (headrope less than 60 feet). This may be due to rising operating costs.

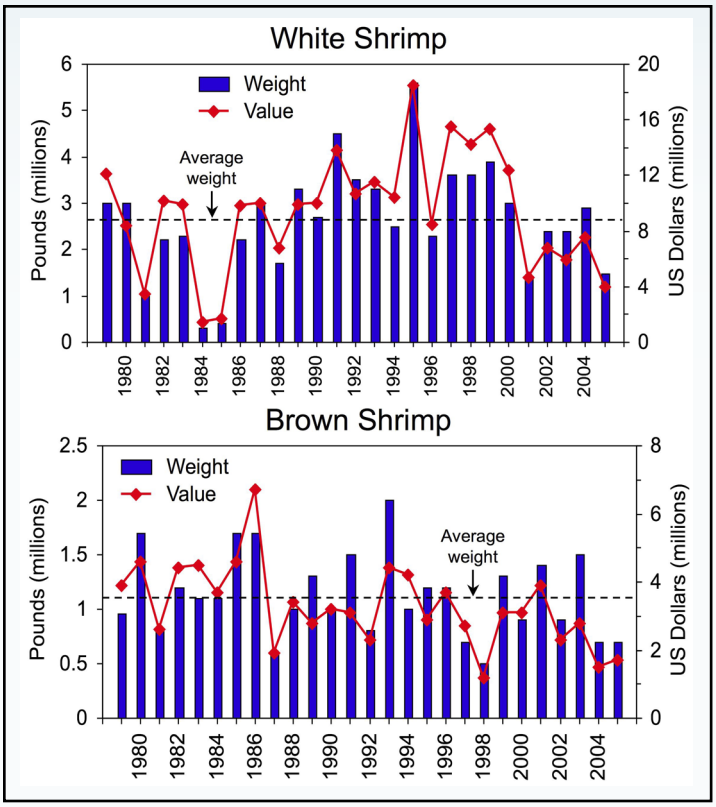


Figure 1. Wild caught shrimp landings and value.

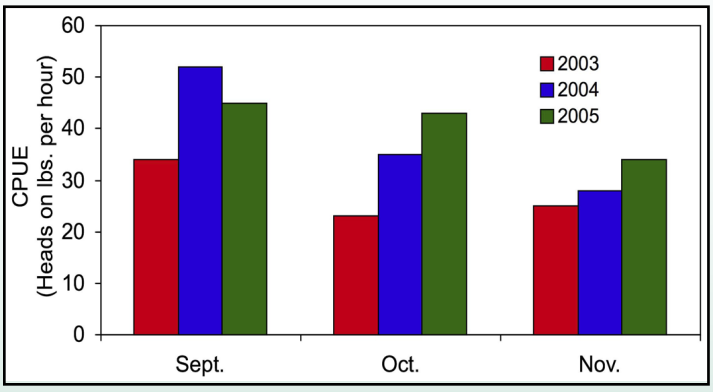


Figure 2. Comparison of CPUE in fall 2003-2005.

Recreational Harvest

Recreational penaeid shrimp are harvested by a variety of methods including cast nets, lift nets, and seines. However, casting for shrimp over bait during the fall shrimp baiting fishery has become the most significant method of recreational harvest.

The number of shrimp baiting permits sold has been in decline since 1998. Permit sales of 9,004 in 2005 marked the lowest sales since 1988 and 1989, the first two years the permit was in place. Effort continued to decline in 2005 as well, with just over 31,000 trips, the majority of which were taken in the Beaufort and Charleston areas. The highest number of trips was approximately 94,000 in 1997. Although effort was at an all time low in 2005, the statewide catch rate, 23.3 whole pounds per active permittee, was the highest it has been since 1997. The estimated take of this fishery was just over 704,000 pounds (heads-off), accounting for approximately 30% percent of the total fall white shrimp landings (2.4 million pounds heads-off). The 2005 estimated baiting catch was one of the lowest recorded in South Carolina since the fishery began and is likely related to decreased effort, high fuel prices, and the availability of relatively low priced shrimp from commercial outlets.

Fishery Independent Sampling

Catch rates of brown shrimp in trawl samples near Charleston have been below average since 2001. In 2005, unusually cool temperatures in the spring probably delayed recruitment of post-larval shrimp and at least delayed growth, if not causing direct mortality. In spring 2006, water temperatures have been closer to normal, which should aid growth and survival of young brown shrimp.

Samples of white shrimp in creek trawls in 2005, although not as abundant as in 2004, were above average in numbers and relatively small in size (Figure 3). Numbers taken in the larger trawl were improved over 2004, and with warm water temperatures observed in winter of 2006, should produce a good crop of spring spawning ("roe") shrimp (Figure 4).

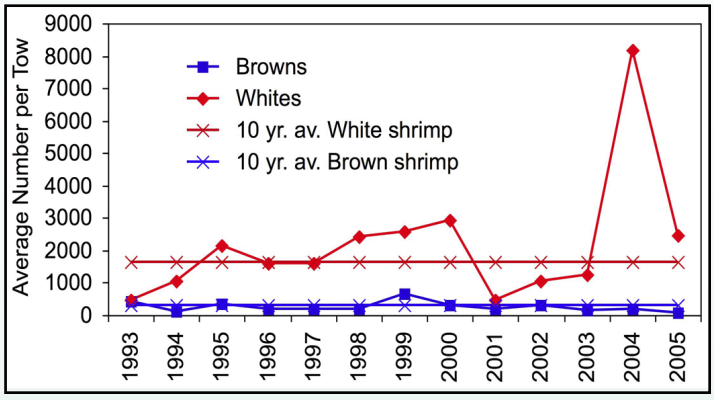


Figure 3. Number of brown and white shrimp per 10-foot trawl tow in tidal creeks in SC.

The ultimate goal of fisheries managers is to not only understand the causes of fluctuations in stocks, but also predict future abundances. The SCDNR has begun to explore application of

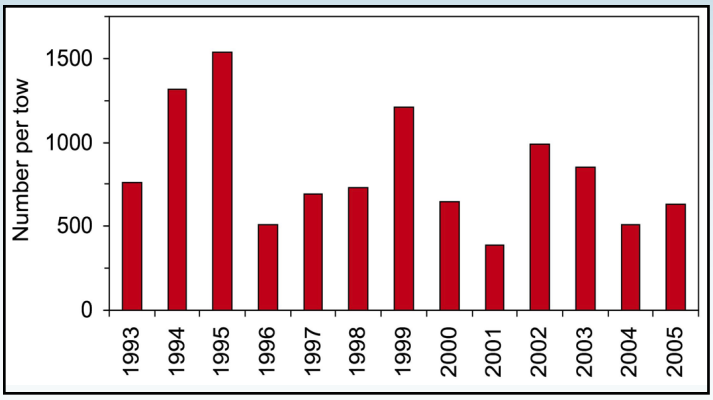


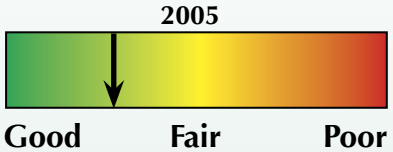
Figure 4. Number per tow of white shrimp caught in fishery independent surveys in fall.

advanced techniques similar to those used to forecast the weather to understand the dynamics of shrimp catches and predict the commercial harvest months in advance. While the effort is in its infancy, staff are encouraged by the preliminary results. The importance of this approach is that it allows the SCDNR to predict the harvest 6-9 month into the future in near real time.

Overall Condition of the Stock

White shrimp catches in 2005 appear to be substantially greater than the catches in 2004, in spite of cold winter temperatures observed in February. An adequate number of spawners survived the winter and produced an improved fall harvest. In spring 2006, conditions have been dry, and if these conditions persist into the fall, harvest of white shrimp may be below normal Black gill disease continues to be prevalent in fall white shrimp stocks. The disease was more severe in Georgia than South Carolina in 2004, but there is still much uncertainty about how the disease affects shrimp. Efforts are underway to better document potential effects to shrimp and shrimp fisheries.

As a result of increased operating costs and the availability of low price, imported shrimp, the number of boats trawling has decreased substantially over the past two years. Total effort and catch among the boats that are trawling are also decreasing. Similar decreases have also been seen in the recreational baiting fishery, probably related to the availability of low cost shrimp. Unless the unit value of shrimp rises, these decreases are likely to continue, potentially changing the character of the commercial and recreational shrimp fisheries in South Carolina.



Contact Information:
Elizabeth Wenner
wennere@mrd.dnr.state.sc.us
Larry DeLancey
delanceyl@mrd.dnr.state.sc.us
Mark Maddox
maddoxm@dnr.sc.gov